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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/523,252	10/06/2005	Peter Schmollngruber	10191/3819	8309
26646	7590	05/30/2007	EXAMINER	
KENYON & KENYON LLP			LEDYNH, BOT L	
ONE BROADWAY			ART UNIT	
NEW YORK, NY 10004			PAPER NUMBER	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/523,252

Applicant(s)

SCHMOLLNGRUBER ET AL.

Examiner

Bot LeDyhn

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 3/27/2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 8-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 8-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>3/27/07</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 8-13 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Kowalski et al (20020118013) or Muth et al (5602471) in view of Wan (2003/0231098). Either Kowalski et al or Muth et al discloses substantially the same invention as claimed (e.g., eight MR elements in a rotationally symmetrical positioning and connected to each other to form two Wheatstone full bridges, interleaved, strip form, orthogonal, etc.). However, both Kowalski et al and Muth et al do not disclose that the eight MR elements are GMR elements. Wan (2003/0231098) discloses that the resistance change and sensitivity caused by GMR elements are much greater than those of MR or AMR. See Wan's paragraph 0004. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify either Kowalski et al or Muth et al by using GMR material to manufacture the eight MR elements as taught by Wan (2003/0231098) in order to have an angle sensor having great resistive and sensitive effects for detecting the angle position of rotatable elements. As to claim 12, it is inherent that the measured angle of an outer magnetic field with respect to a magnetization of a reference layer in such angle sensors of Kowalski et al or Muth et al

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in view of Wan is over 360 degrees (i.e., measurement beyond one complete turn). As to claim 16, absent of the criticality of the shape of the eight GMR (i.e., the criticality between an octagonal shape and an circular shape), the arrangement of the circular position of the eight GMR is a matter of design choice, such as for aesthetic purposes or for conforming with the circular shape of the sensor package.

Claims 14-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kowalski et al (20020118013) or Muth et al (5602471) in view of Wan (2003/0231098) as applied to claims 1-13 and 16 above, and further in view of either Schroeder et al (6566867) or Lin et al (6519549). Either Kowalski et al (20020118013) or Muth et al (5602471) in view of Wan (2003/0231098) disclose substantially the same invention as claimed, except for the use of the GMR sensor elements in an angle sensor for detecting an absolute position of a crankshaft or in a steering system, etc. Schroeder et al discloses an angle sensor for detecting an absolute position of crankshaft (see col. 1, lines 17-19). Lin et al discloses an angle sensor for detecting an absolute position of a steering system (see col.3, lines 7-27). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify either Kowalski et al or Muth et al in view of Wan as applied to claims 1-13 and 16 above by using the GMR sensor in an angle sensor in order to detect an absolute position of a crankshaft or using it in a steering system to detect the position of rotating elements. As to claims 18, absent of the criticality of the shape of the eight GMR (i.e., the criticality between an octagonal shape and an circular shape), the arrangement of the circular position of the eight GMR

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is a matter of design choice, such as for aesthetic purposes or for conforming with the circular shape of the sensor package.

Although specific columns, figures, reference numerals, lines of the reference(s), etc. have been referred to, Applicant should consider the entire applied prior art reference(s).

Claims 16 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kowalski et al (20020118013) or Muth et al (5602471) in view of Wan (2003/0231098) and further in view of either Schroeder et al (6566867) or Lin et al (6519549) as applied to claims 14-15 and 17 above and still further in view of Doescher (2002/0149358). Kowalski et al or Muth et al in view of Wan and further in view of either Schroeder et al or Lin et al disclose substantially the same invention as claimed except for the eight GMR elements being circularly positioned. It is noted that the Applicant does not show a drawing of the sensor in a circular shape and the eight elements sensor shape of Doescher (2002/0149358) is substantially circular on a square substrate (see Fig.2). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify either Kowalski et al or Muth et al in view of Wan and Schroeder et al (or Lin et al) by employing the circular shape of the sensor elements of Doescher (2002/0149358) for the sensor elements to be symmetrical on a square substrate.

Applicant's arguments with respect to claims 8-14 have been considered but are moot in view of the new ground(s) of rejection.

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Van Den Berg (6313627) is cited for the use of GMR in an angle sensor, and other references for the use of angle sensors in motor vehicle.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Bot LeDynch whose telephone number is 5712722231. The Examiner normally does not work on Fridays. The examiner can normally be reached on Maxiflex.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Lefkowitz can be reached on 5712722180. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

BL/ 2007



Bot LeDynch, J.D., Ph.D., D.A.
Primary Examiner